UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,335	04/01/2004	Richard W. Citta	P01,0447-02	7549

26574   7590   05/14/2007

SCHIFF HARDIN, LLP
PATENT DEPARTMENT
6600 SEARS TOWER
CHICAGO, IL 60606-6473

EXAMINER
SINGH, HIRDEPAL

ART UNIT	PAPER NUMBER
2609	

MAIL DATE	DELIVERY MODE
05/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 April 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>60-72</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>60-72</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 April 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>7/07/2004</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

This action is in response to the filing date of 4/01/2004. Claims 60-72 are pending and have been considered below.

Priority

1.   It is noted that this application appears to claim subject matter disclosed in prior Application No. 09/572,122, filed 5/17/2000. A reference to the prior application must be inserted as the first sentence(s) of the specification of this application or in an application data sheet (37 CFR 1.76), if applicant intends to rely on the filing date of the prior application under 35 U.S.C. 119(e), 120, 121, or 365(c). See 37 CFR 1.78(a). For benefit claims under 35 U.S.C. 120, 121, or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of all nonprovisional applications. If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference to the prior application must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen

months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and

(a)(5)(ii). This time period is not extendable and a failure to submit the reference

required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is

considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e),

120, 121 and 365(c). A benefit claim filed after the required time period may be

accepted if it is accompanied by a grantable petition to accept an unintentionally

delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must

be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR

1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge

under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the

claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was

unintentional. The Director may require additional information where there is a question

whether the delay was unintentional. The petition should be addressed to: Mail Stop

Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time

period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or

an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference

was submitted in an oath or declaration or the application transmittal letter), and the

information concerning the benefit claim was recognized by the Office as shown by its

inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge

under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference

in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the

specification or an ADS. See MPEP § 201.11.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 60-65, and 70-72 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Khayrallah et al. (US 6,320,919).

Claim 60: Khayrallah discloses a method and system for decoding data by using the

decoded data symbols, re-encoding the decoded data to control the equalizer/estimator.

        a. receiving a signal that is encoded at the transmitting end (abstract; column 4,

lines 38-45), but doesn't explicitly disclose that the received signal contains a code

vector. However, it is inherent that the encoded signal received at the receiver is in the

form of code vector i.e. the signal may be in the form of 8 bit or 16 bit code for example.

Therefore, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to use the encoded signal for communication networks and

receiving the same at the receiver in the form of code vector. One would have been

motivated to use a signal in the form of a code vector at the receiver to use the same

decoding technique as use at the transmitter to encode the signal;

     b. <u>Khayrallah</u> discloses keeping track the values of the received signal/symbol

(column 17, lines 14-35; figure 6);

     c. Khayrallah discloses generating a reliability or quality or error signal by re-

encoding the decoded signal (column 7, lines 3-12, and lines 57-64).

Claim 61: <u>Khayrallah</u> discloses a method and system for decoding data by using the

decoded data symbols as in claim 60 above, and further discloses that the

equalizer/estimator is controlled in accordance with the re-encoded data fed back to the

equalizer through characterization estimator 32 (figure 3; column 8, lines 1-40).

Claim 62: <u>Khayrallah</u> discloses a method and system for decoding data by using the

decoded data symbols as in claim 60 above, and further discloses that one of the

values of the signal is largest (column 13, lines 19-26).

Claim 63: <u>Khayrallah</u> discloses a method and system for decoding data by using the

decoded data symbols as in claim 60 above, and further discloses that the reliability or

quality or error signal is generated to control the equalizer based on re-encoding the

decoded signal, the un-decoded signal from the output of equalizer, and the un-

modulated signal from the input of equalizer (figure 3; column 8, lines 19-42) it is clear

that the reliable/control/feed back signal is derived from comparing the signal values.

Furthermore, Khayrallah discloses deriving the reliable/error signal from the difference between received and predicted data values (column 12, lines 35-45).

Claim 64: Khayrallah discloses a method and system for decoding data by using the decoded data symbols as in claim 60 above, and further discloses that reliable factor/signal or error signal or control signal is generated by using a parameter associated with signal to noise ratio and the coefficient of tap values, where one of the coefficient of tap values is largest (column 13, lines 1-26), but doesn't explicitly disclose that the reliable signal/factor is based on the difference between a largest and next to largest value of received signal. However, the reliability factor/signal or error signal generated is based on different parameters such as coefficients of tap values and signal to noise ratio including the largest value as discussed above. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor based on the difference between largest and next to largest value in the received signal. One would have been motivated to use the largest and next to largest values to generate the reliability signal/factor to get the decoded data in the same form as it was before the encoding.

Claim 65: Khayrallah discloses a method and system for decoding data by using the decoded data symbols as in claim 64 above, and further discloses that equalizer/estimator is controlled according to the reliability or error signal generated by

using the decoded, encoded signal values (figure 3; column 8, lines 19-40; column 15, lines 36-50).

Claim 70: <u>Khayrallah</u> discloses a method and system for decoding data by using the decoded data symbols as in claim 60 above, and further discloses that the received signal values are provided to correlation estimator for estimating interference (column 7, lines 38-50).

Claim 71: <u>Khayrallah</u> discloses a method and system for decoding data by using the decoded data symbols as in claim 60 above, and further discloses that the reliable or error signal/factor is generated based on the difference between square of received signal values (column 11, lines 1-12).

Claim 72: <u>Khayrallah</u> discloses a method and system for decoding data by using the decoded data symbols as in claim 60 above, and further discloses that reliable factor/signal or error signal or control signal is generated by using a parameter associated with signal to noise ratio and the coefficient of tap values, where one of the coefficient of tap values is largest (column 13, lines 1-26), furthermore <u>Khayrallah</u> discloses that the reliable or error signal/factor is generated based on the difference between square of received signal values (column 11, lines 1-14), but doesn't explicitly disclose that the reliable signal/factor is based on the difference between square of largest and next to largest values of received signal. However, the reliability

factor/signal or error signal generated is based on different parameters such as coefficients of tap values and signal to noise ratio including the square of largest value as discussed above. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor based on the difference between square of largest and next to largest value in the received signal. One would have been motivated to use the square of largest and next to largest values to generate the reliability signal/factor to get the decoded data in the same form as it was before the encoding.

4.   Claims 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah et al. (US 6,320,919) in view of Molnar (US 6,567,481).

Claim 66: Khayrallah discloses a method and system for decoding data by using the decoded data symbols as in claim 60 above, but does not explicitly disclose that the reliable signal/factor is generated based on a comparison of one received signal value to a threshold. However, Molnar discloses a similar method and receiver for data detection by using decoded and re-encoded data to generate a reliable or error signal to control the equalizer, and further discloses that the received signal symbol is adjusted according to the error or reliable signal until it converges to a predetermined threshold (column 3, lines 28-41) i.e. the received signal is compared to a threshold. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to compare the received signal value in Khayrallah to a threshold to generate

a reliable signal/factor. One would have been motivated to compare a received signal value to a threshold to generate the reliable signal/factor to make sure the weighting of the feedback is within the required limit.

Claim 67: <u>Khayrallah</u> and <u>Molnar</u> disclose a method and system for decoding data by using the decoded data symbols as in claim 66 above, and Khayrallah further discloses that the received signal value is largest one of received signal values (column 13, lines 19-26).

Claim 68: <u>Khayrallah</u> and <u>Molnar</u> disclose a method and system for decoding data by using the decoded data symbols as in claim 66 above, and <u>Molnar</u> further discloses that the received signal symbol is adjusted according to the error or reliable signal until it converges to a predetermined threshold (column 3, lines 28-41) i.e. the received signal is compared to a threshold, but does not explicitly disclose that the reliable signal is generated if the received signal value is greater than the threshold. However, this is just a variation of comparison between the received signal value and the threshold to generate the reliable signal, as threshold is greater than or less than or equal to the received signal value. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor if the compared received signal value is greater than the threshold. One would have been motivated to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit.

Claim 69: <u>Khayrallah</u> and <u>Molnar</u> disclose a method and system for decoding data by using the decoded data symbols as in claim 66 above, and Khayrallah further discloses that the generated reliability signal/factor is dependent on the magnitude of one received signal value (column 13, lines 1-26).

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. <u>Mobin</u> et al (US 6,522,696) discloses an adaptive frequency correction method in wireless communication, generating the reliable/error signal based on decoded and reencoded data.

b. <u>Tsui</u> et al (US 6,278,730) discloses system and method for decoding data based on error signal representing the received signal and the decoded encoded signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hirdepal Singh whose telephone number is 571-270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off)8:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James Myhre can be reached on 571-272-6722. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HS
May 3, 2007

James W. Myhre
Supervisory Primary Examiner